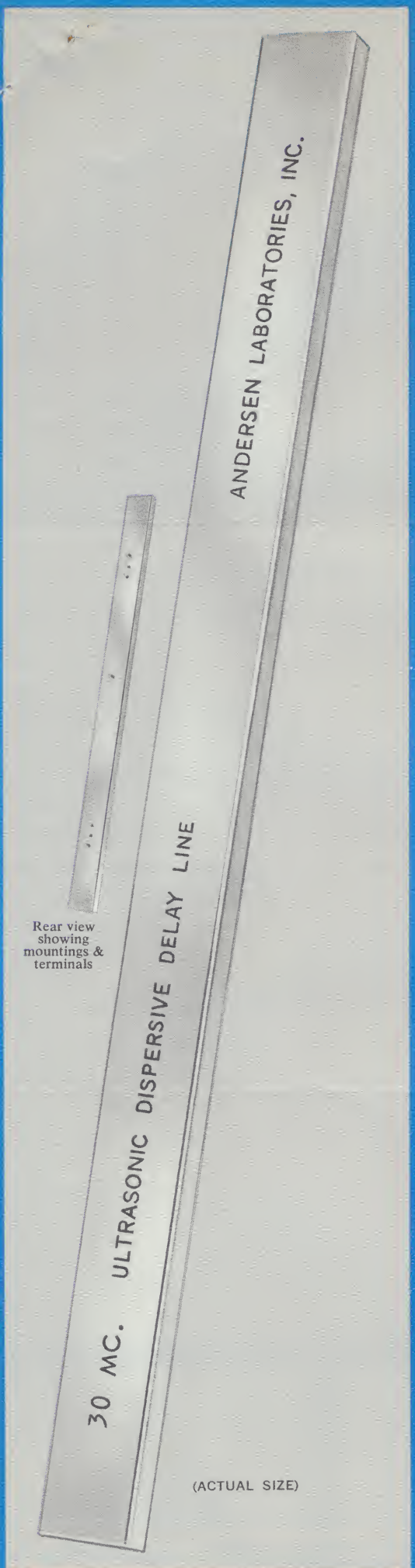


Rear view showing mountings & terminals

METALLIC STRIP DISPERSIVE DELAY LINES

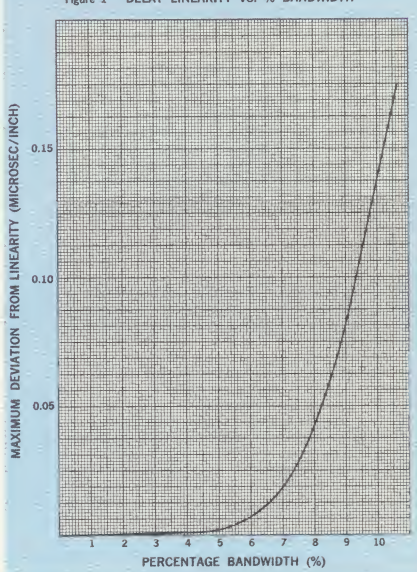
■ The Andersen Metallic Strip Dispersive Delay Line provides a linear function of delay versus frequency. This is accomplished by capitalizing on the existence of a dispersive mode of propagation of elastic waves in a narrow metallic strip. Dispersive properties of a particular type of metal are completely defined by a "Universal Curve", a plot of the delay per unit length versus frequency times the thickness of the strip. The "Universal Curve" for the metal used in Andersen Laboratories' Metallic Strip Dispersive Delay Line is reproduced in Figure 2.

Selection of a center frequency and the delay at center frequency determines the length and thickness of the required metallic strip. The choice of center frequency is governed by the required bandwidth over which delay must be linear and the permissible maximum deviation from linearity as determined by the time sidelobe requirement. Note that delay linearity is strongly dependent on the percentage bandwidth selected. If exceptionally good delay linearity is essential, the center frequency should be chosen high enough to permit use of as small a percentage bandwidth as possible. The rapidity with which delay linearity improves as the percentage bandwidth is reduced from 10% is illustrated in Figure 1.

It is important to recognize that non-linearities, due to the thickness tolerance that can be held during manufacture, increase as the center frequency is increased. At the present time, the practical upper limit on center frequency is approximately 40 MC.

The choice of the delay at center frequency determines the delay dispersion. Clearly the delay at center frequency must be selected with bandwidth and delay linearity requirements in mind. The higher the delay at center frequency, the longer the metallic strip is and the wider the available delay dispersion.

Figure 1 DELAY LINEARITY VS. % BANDWIDTH



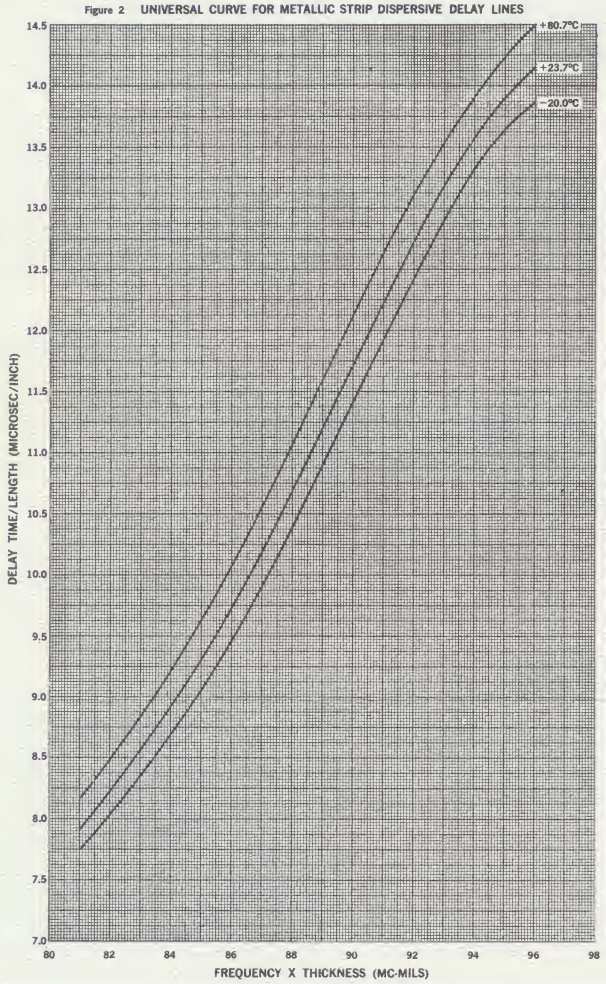
MSD-300 SERIES

TYPICAL PERFORMANCE PARAMETER COMBINATIONS ATTAINABLE:

Center Frequency (MC)	10	10	20	20	30	30
Bandwidth (MC)	0.93	0.81	1.86	1.61	2.79	2.42
Delay Dispersion (μsec)	42.5	36.65	42.5	36.65	42.5	36.65
Delay Linearity (μsec)*	1.0	0.5	1.0	0.5	1.0	0.5
Center Frequency Delay (μsec)	113.4	113.4	113.4	113.4	113.4	113.4
Pulse Compression Ratio	39.5	29.5	79.0	59.1	118.5	88.7
Spurious (db)	—35	—35	—35	—35	—35	—35
Average Insertion Loss (db)	30	30	35	35	40	40

* Maximum Deviation from a Straight Line

Figure 2 UNIVERSAL CURVE FOR METALLIC STRIP DISPERSIVE DELAY LINES



Andersen Metallic Strip Delay Lines are available either as dispersive components or as complete unity gain pulse compression systems which include drivers, postamplifiers and weighting filters.

Prices range from $1,000 depending on requirements.

Delivery generally can be made within 60 days.

ANDERSEN LABORATORIES, INC.

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ANNOUNCING DELECON

A Significant Breakthrough In Pulse Compression/Expansion Technology

Andersen has developed a radical departure in pulse compression/expansion techniques for radar systems. Called Delecon for DELay Extend and CONtract, this new concept promises to revolutionize the current state of the art and obsolete all present methods. Delecon's potential is outlined below:

PERFORMANCE: EXTENDED

Pulse compression ratio to 1,000:1 • bandwidth to 25 megacycles • center frequency from 10 to 100 megacycles • side lobe levels to 40 db. Delecon offers an inherent high order of stability and high reliability under a wide range of environmental conditions. Delecon is intrinsically highly reproducible.

COST: SIGNIFICANTLY LOWERED

Delecon uses a new principle of acoustic transmission in fused quartz. Flexible, solid-state circuitry and advanced design reduce initial as well as installation and maintenance costs. Original cost will usually be about 50% less than that of present systems.

SIZE: SUBSTANTIALLY REDUCED

While actual dimensions may vary according to individual specifications, in general a Delecon unit will approximate 2 cubic feet in size. This single, compact, low-weight device will replace the several large racks of equipment required to perform all pulse compression/expansion functions. Now PC/E techniques are available to systems heretofore limited by size and weight considerations to more conventional waveforms.

Delecon is a proven concept, available in custom configurations. We urge you to investigate the advantages of this remarkable system.

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